

## REMARKS/ARGUMENTS

Claims 1-30 are pending in the present application.

This Amendment is in response to the Office Action mailed October 2, 2003. In the Office Action, the Examiner rejected claims 1-5, 6-9, 10, 11-15, 16-19, 20, 21-25, 26-29 and 30 under 35 U.S.C. §103(a). Reconsideration in light of the amendments and remarks made herein is respectfully requested.

### *Rejection Under 35 U.S.C. § 103*

1. In the Office Action, the Examiner rejected claims 1-5, 6-9, 10, 11-15, 16-19, 20, 21-25, 26-29 and 30 under 35 U.S.C. §103(a) as being unpatentable over “Completion time multiple branch prediction for enhancing trace cache performance” by Rakvic et al. (“Rakvic”), Computer Architecture, 2000. Proceedings of the 27<sup>th</sup> International Symposium on, 2000, Pages(s): 47-58 in view of U.S. Patent No. 6,272,598 issued to Arlitt et al. (“Arlitt”). Applicants respectfully traverse the rejection and contend that the Examiner has not met the burden of establishing a prima facie case of obviousness.

Applicants reiterate the arguments set forth in the previously filed Response to the Office Action.

Rakvic discloses a technique for completion time multiple branch prediction for enhancing trace cache performance. Two fetch times are used. At instruction fetch time, global history is used to predict the next trace to be fetched (Rakvic, page 48, right column, lines 15-17). At instruction completion time, a candidate trace is formed by a trace fill unit based on the sequence of recently-executed blocks and certain trace construction heuristics (Rakvic, page 48, right column, lines 27-29).

Arlitt discloses a web cache performance by applying different replacement policies to the web cache. A cache manager controls the eviction of cached objects in a cache. Each storage area of the cache is refreshed in accordance with one of a number of replacement policies (Arlitt, col. 5, lines 35-39). One of the replacement policies is a Least Frequently Used (LFU)-Aging policy that replaces the LFU object based on an aging component. The aging component avoids cache pollution by reducing the frequency count of each cached object by a factor of two whenever the average frequency count exceeds a threshold (Arlitt, col. 6, lines 42-49).

Rakvic and Arlitt, taken alone or in combination, does not disclose, suggest, or render obvious (1) a cache management logistics to control transfer of a trace, (2) a first cache to evict the trace based on a replacement mechanism, and (3) a second cache to receive the evicted trace based on number of accesses.

Rakvic merely discloses multiple branch predictor. The trace fill unit merely forms a candidate trace (Rakvic, page 48, right column, lines 27-29). It does not evict the trace. The block-based trace cache stores the actual instructions organized as blocks (Rakvic, page 49, left column, lines 6-8). It does not receive the evicted trace. Arlitt merely discloses a Web cache structure. Each storage device in the cache system stores objects received from the remote sites (e.g., data file, text file, graphic file, audio file, video file) (Arlitt, col. 1, lines 21-24), not an instruction block in a trace. Furthermore, the LFU-Aging replacement policy is merely a replacement policy. It is not used to receive the evicted trace.

There is no motivation to combine Rakvic and Arlitt because neither of them addresses the problem of trace cache filtering. There is no teaching or suggestion that a cache management logistics to control transfer of a trace, a first cache to evict the trace, and a second cache to receive the evicted trace is present. Rakvic and Arlitt, read as a whole, does not suggest the desirability of filtering a trace cache.

The Examiner failed to establish a *prima facie* case of obviousness and failed to show there is teaching, suggestion or motivation to combine the references. "When determining the patentability of a claimed invention which combined two known elements, 'the question is whether there is something in the prior art as a whole suggest the desirability, and thus the obviousness, of making the combination.'" In re Beattie, Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 730 F.2d 1452, 1462, 221 USPQ (BNA) 481, 488 (Fed. Cir. 1984). "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or implicitly suggest the claimed invention or the Examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." Ex parte Clapp, 227 USPQ 972, 973. (Bd.Pat.App.&Inter. 1985).

In the present invention, the cited references do not expressly or implicitly suggest (1) a cache management logistics to control transfer of a trace, (2) a first cache to evict the trace based

on a replacement mechanism, and (3) a second cache to receive the evicted trace based on number of accesses. In addition, the Examiner failed to present a convincing line of reasoning as to why a combination of Rakvic and Arlitt is an obvious application of trace cache filtering.

Therefore, Applicants believe that independent claims 1, 11, 21 and their respective dependent claims are distinguishable over the cited prior art references. Accordingly, Applicants respectfully request the rejections under 35 U.S.C. §103(a) be withdrawn.

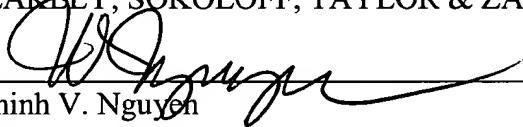
***Conclusion***

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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